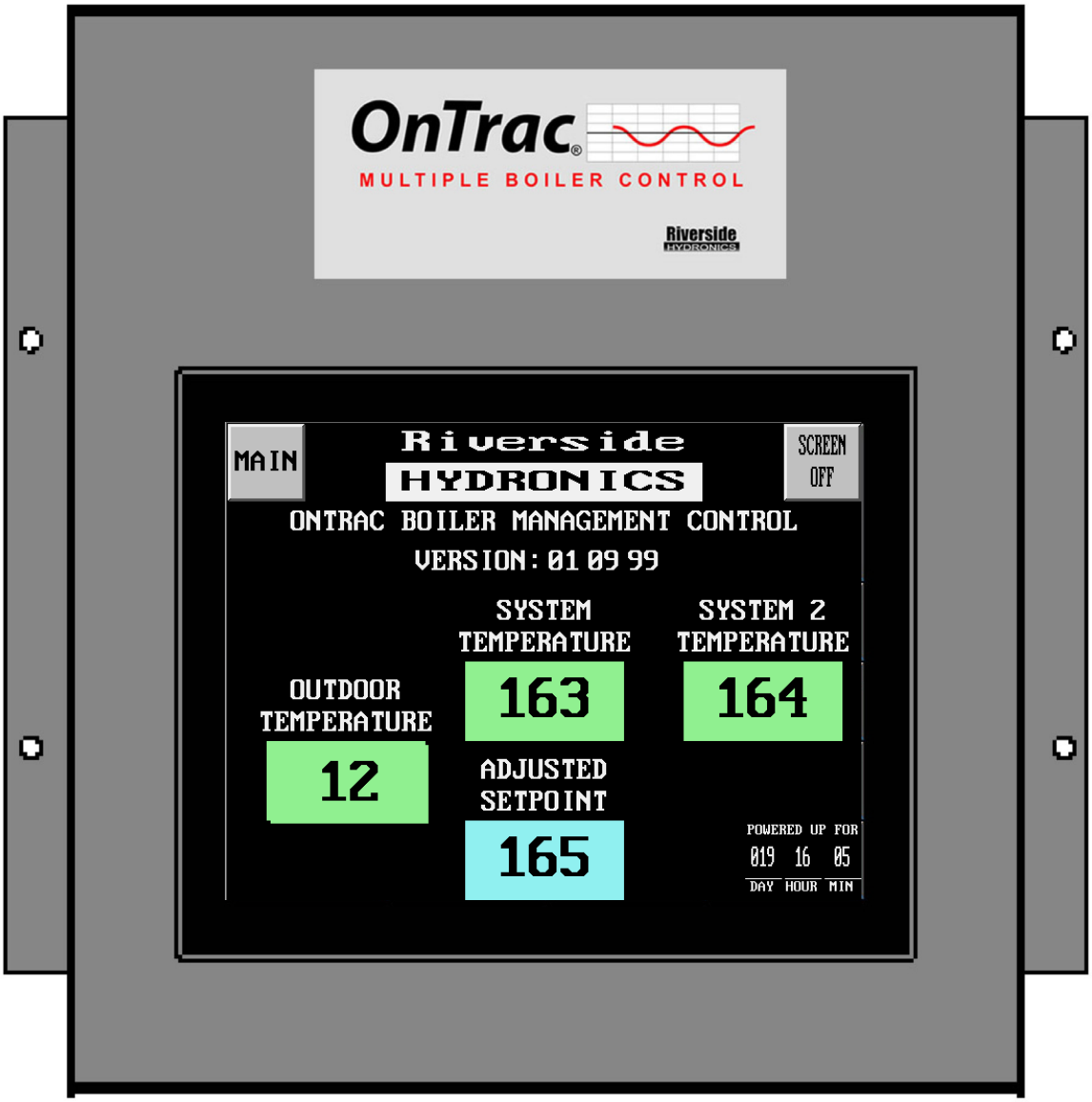
Riverside HYDRONICS

Installation and Wiring Guide for the *OnTrac®*

CS4 and *CS8* Boiler Management System



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INSTALLATION NOTES AND WARNINGS

WARNING: Improper installation, operation, adjustment, alteration, service or maintenance can cause damage to the device, property damage, personal injury, exposure to hazardous material or death. Refer to the information contained in this manual.

WARNING: Do not use this electronic control as a primary limit control. Other limit and operating controls that are intended and certified as safety controls and limits must remain in or be added to the control circuit. Use of this control as a primary limit control can cause property damage, personal injury, exposure to hazardous material or death.

NOTE: It is your responsibility to ensure this control is installed according to all applicable codes and standards.

NOTE: Other than externally accessible fuse(s), there are no user serviceable parts. Refer all other service requirements to a qualified agent. Service by other than a qualified agent voids the warranty.

WARNING: Do not attempt to service this control. Such an attempt can cause damage to the device, property damage, personal injury, exposure to hazardous material or death.

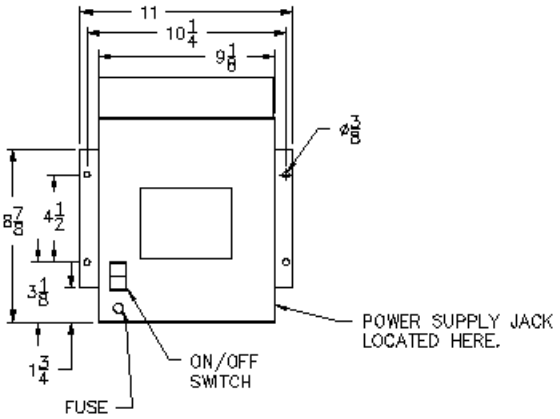
LOCATION AND MOUNTING

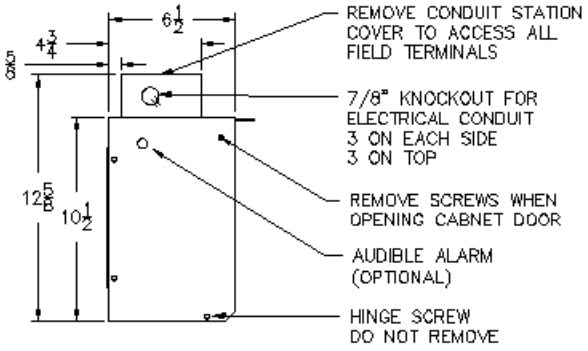
Placement of the controls is important. To enable proper wiring during rough in, select an appropriate location for the controls early in the construction process. Consider the following:

- Keep dry. Avoid potential leakage onto the control. RH 80% to 88°F (31°C), down to 50% from 104 to 122°F (40 to 50°C). Non-condensing environment.
- Do not expose to temperatures beyond 32-122°F (0-50°C).
- Provide adequate ventilation.
- Keep away from equipment, appliances or other sources of electrical interference.
- Provide easy access for wiring, viewing, and adjusting the display screen.
- Mount approximately 5 ft. (1.5 m) off the finished floor.
- Mount the control enclosure as close to the equipment being controlled as possible.
- Mount the enclosure to a solid backing.

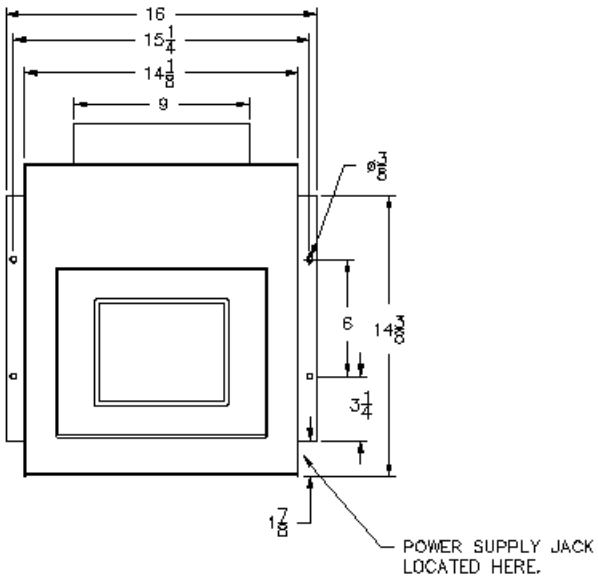
CABINET DETAILS

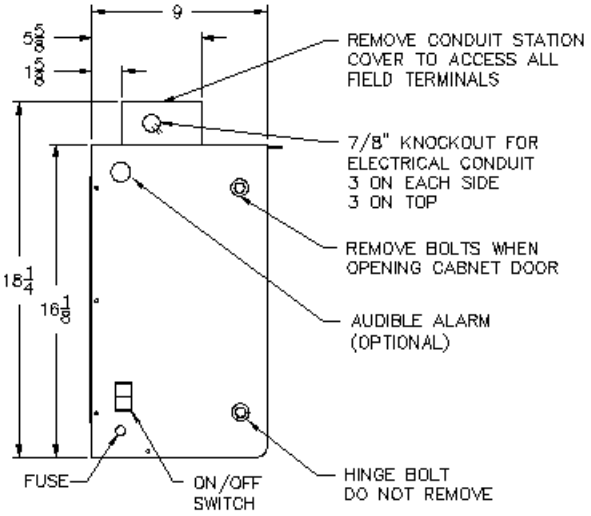
CS4





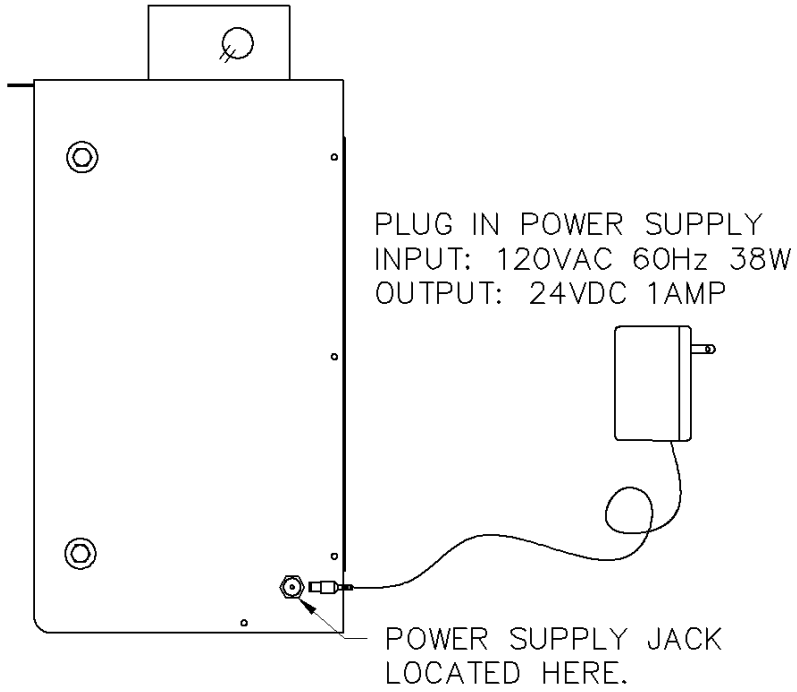
CS8



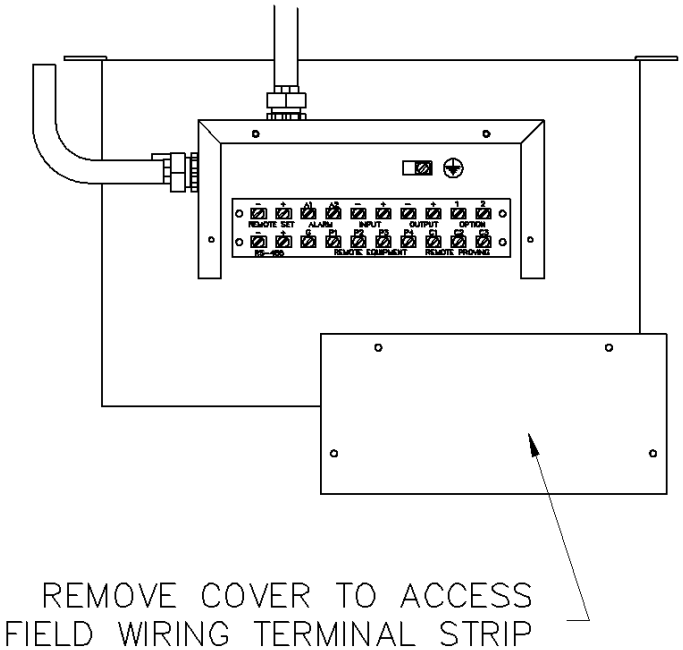


PLUG IN POWER SUPPLY

- A plug in 24VDC power supply is provided with OnTrac. Connect as shown.



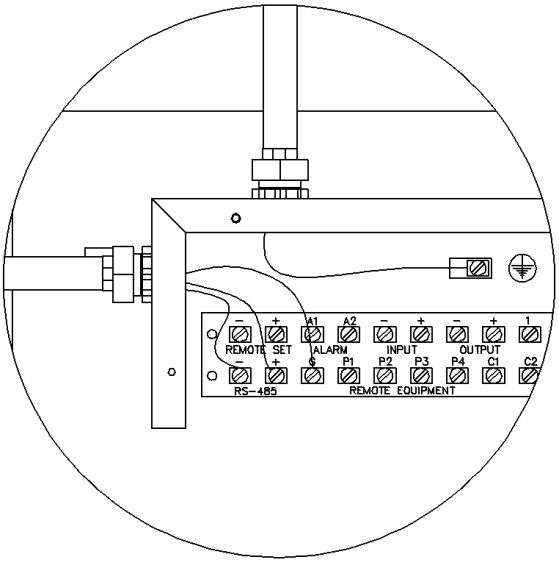
- Field connection terminal are located under access cover.

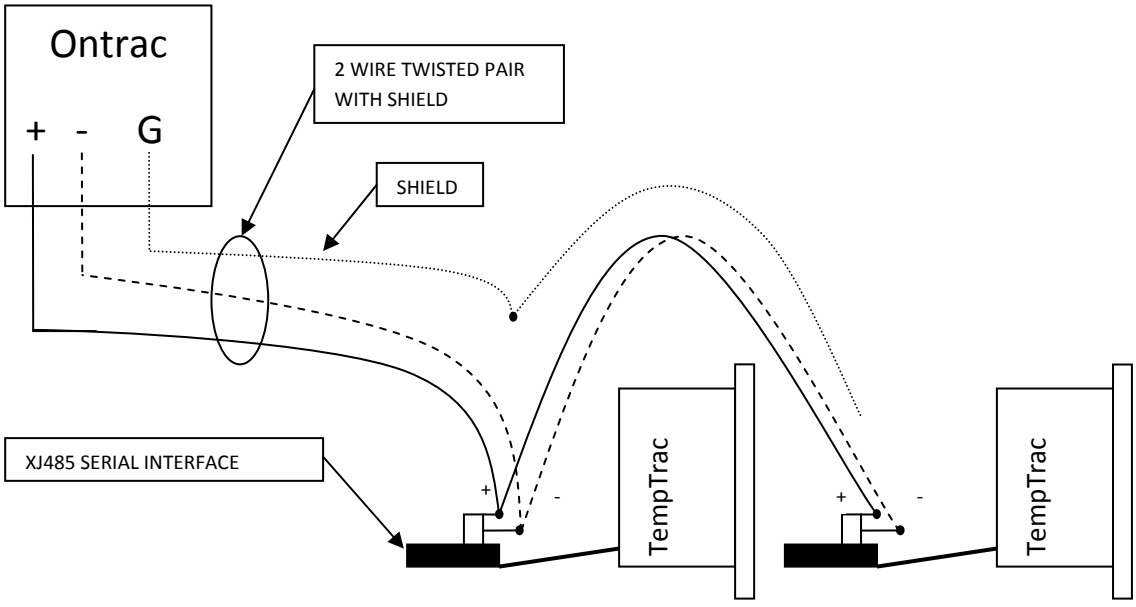


WIRING RS485 COMMUNICATION WIRES

The RS485 serial line applied to the OnTrac is a "Two Wire" electrical interface in accordance with the EIA/TIA-485 standard. On such a 2 wire-bus, at any time only one driver has the right for transmitting. A third conductor is to provide shielding and a common ground for the system. A balanced twisted pair with shield is recommended. AWG26 or larger can run up to 1000m. It is recommended that the RS485 serial line be run separately from any other electrical wiring in order to minimize electric interference.

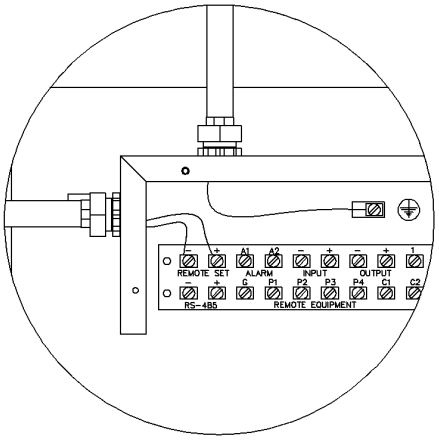
- Connect the positive wire to the + terminal on the field connection terminal strip.
- Connect the negative wire to the – terminal on the field connection terminal strip.
- Connect the common ground and shield to the G terminal on the field connection terminal strip.
- Connect earth ground to ground lug.





WIRING AN EXTERNAL SET POINT (4-20mA INPUT)

The OnTrac can utilize an external 4-20mA input from an Energy Management System (EMS) or any other signal source as a means of adjusting the set point. The Remote Set Point menu on the OnTrac must be activated and set up correctly in order to achieve the desired adjustment. See Programming Manual 34-152 for details.

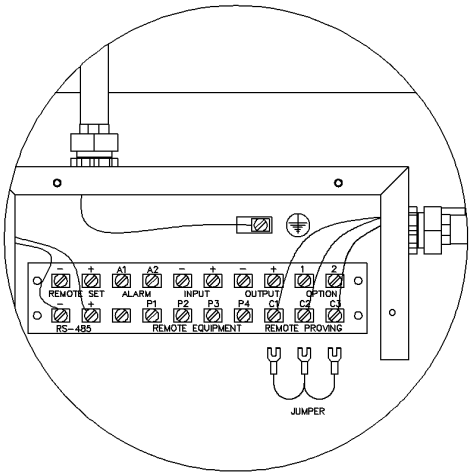


Connect the current input to the Remote Set terminals as described in the illustration below.

- Connect the positive wire to the + terminal.
- Connect the negative wire to the – terminal.
- Connect the shield to the G terminal or the Earth Ground lug.

WIRING ENABLE/DISABLE & REMOTE PROVING

The Enable/Disable contacts can be used by a building management system to remotely enable and disable the boiler system. The Remote Proving feature is provided to check the status of non-vital system components. This must not be used for critical operation or safety related proving circuits, as the boilers are capable of autonomous operation, and all such proving needs to be connected directly to each boiler. In the event that a component does not operate, the OnTrac will disable all boilers and indicate an alarm. These features are enabled by removing the jumpers shown in the illustration below. See Programming Manual 34-152 for details.

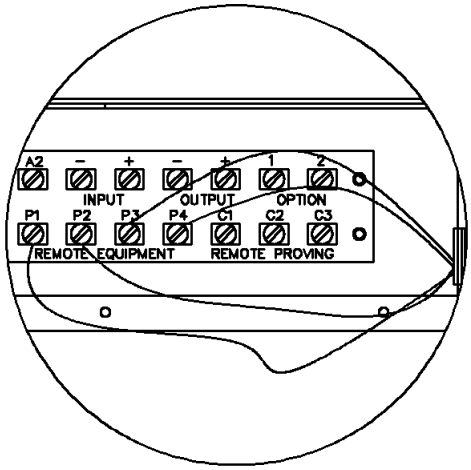


A typical use for the Remote Proving feature is to check for water flow. When there is a call for heat the Remote Equipment relay will activate equipment and the OnTrac® will wait for the Remote Proving input to be energized. If the circuit is not energized within the time allotted the boiler will be turned off.
Connect the Enable/Disable and Remote Proving circuit as follows:

- C1 – C2 Jumped, system is enabled. Open, system is disabled with no alarm.
- C2 – C3 Jumped, system is enabled. Open, system will shut down with alarm after delay.

WIRING THE REMOTE EQUIPMENT RELAYS

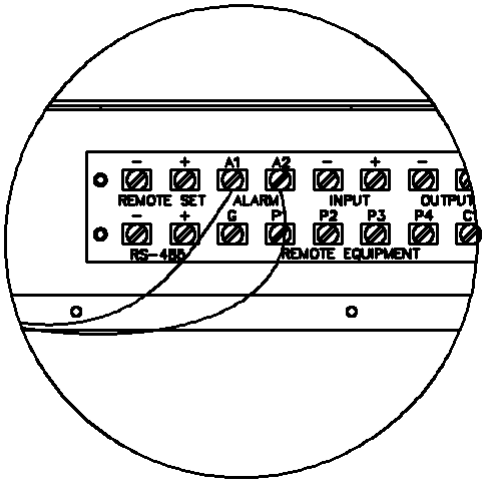
The Remote Equipment feature is provided for the activation of equipment such as circulation pumps, air louvers and active ventilation systems. When there is a call for heat the OnTrac will energize the remote equipment contacts and wait for a set time for any Remote Proving circuits to be energized. There are two relay outputs provided. See Programming Manual 34-152 for details.



- There are two Remote Equipment outputs available. Both relays are rated for 110VAC with a maximum switching current of 10A.
- Connect the load for control circuit 1 to P1 and P2. This is a N.O. contact and will be open on power failure and closed on call for remote equipment.
- Connect the load for control circuit 2 to P3 and P4. This is a N.C. contact and will be closed on power failure and open on call for remote equipment.

WIRING THE REMOTE ALARM RELAYS

The Remote Alarm contacts are provided as a remote indication of a system alarm. This indication is not specific in nature but intended to alert the user of a problem. Details of the alarm condition can be found by viewing the Boiler Status screen on the OnTrac or at the individual boiler.



- The relay contacts for this feature are rated for 110VAC with a maximum switching current of 10A.
- Connect the alarm load to A1 and A2.

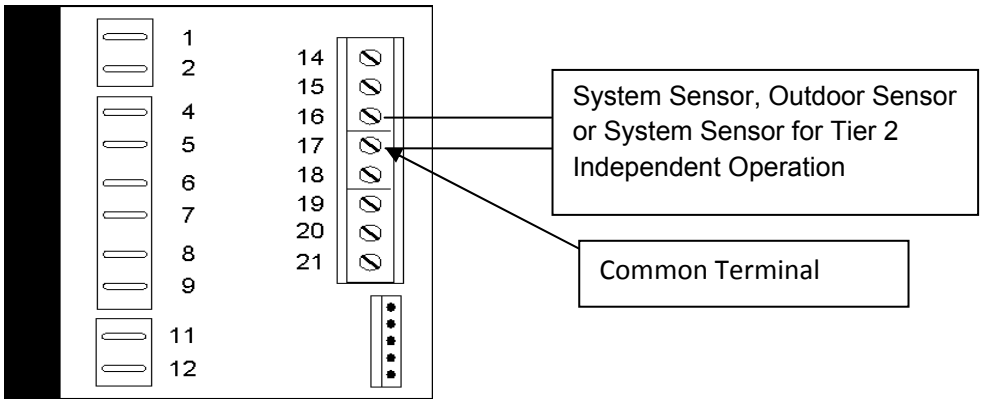
WIRING SYSTEM SENSOR AND OUTDOOR SENSOR

The system and outdoor sensors for the OnTrac are typically connected through Boiler 1 for the system sensor and Boiler 2 for the outdoor sensor. This is the default assignment but the location can be changed in the event of a faulty control. Follow the instruction below for wiring termination.

The wire leads for the system and outdoor sensor should be connected to the TempTrac control located on the control panel of the boiler. Use sensor P/N 102163 and thermal well P/N 109535 for the system sensor. The thermal well will not be necessary for the outdoor sensor.

1. Turn off power to the boiler
2. Open the control panel to gain access to the back side of the TempTrac® controller.
    a. On a Centauri, & VT3 boilers, you would remove the lower cover via the center FLAT HEAD screw, and then remove the 4 screws from the top of the control enclosure and then the panel and top will rotate out and down on a hinge.

    b. For other Boilers, please reference their corresponding I & O MANUAL for proper access to control enclosure.
3. The sensor leads connect to the back of the TempTrac control mounted in the control panel.
4. At the back of the TempTrac control, connect one lead of the system sensor or outdoor sensor to green screw terminal 16 (TP3 3 Input) and the other to green screw terminal 17 (TP COMMON). There is no polarity to be concerned about, so either wire can be connected to either terminal. Terminal 17 is a common terminal shared by TP1 & TP2 temperature sensor probes. Do not remove any wires already connected to terminal 17.



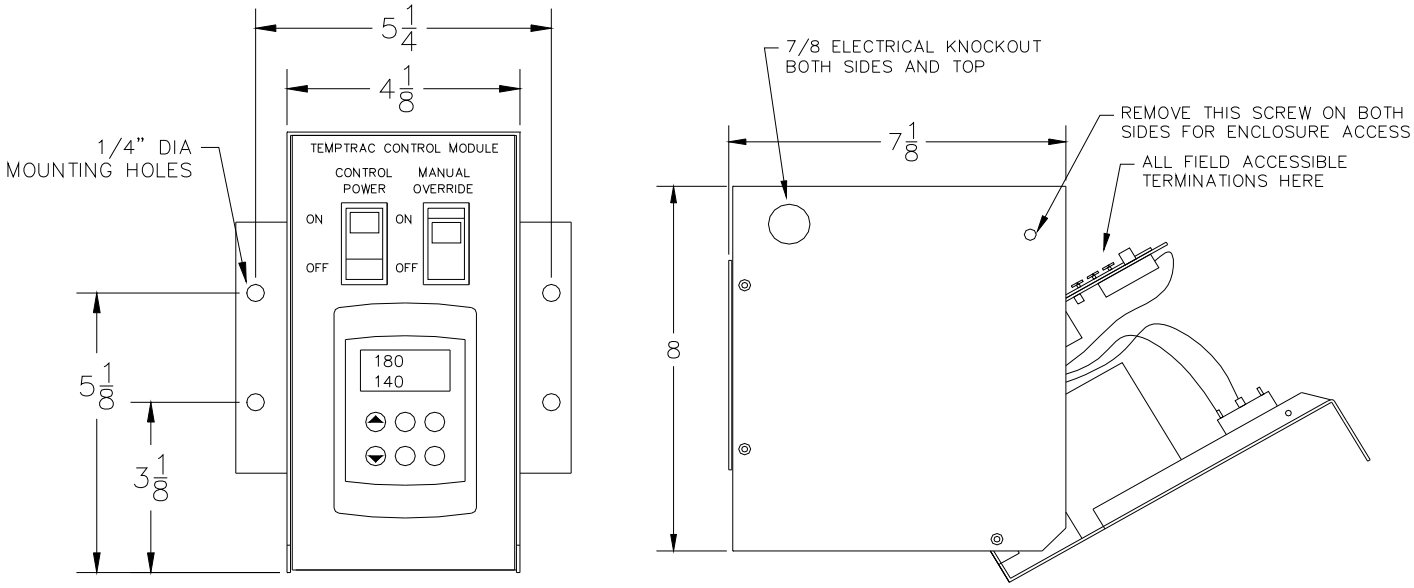
TEMPTRAC CONTROL MODULE

When non-Riverside Hydronics boilers are controlled by the OnTrac boiler management system, the optional TempTrac Boiler Control module can be applied as a fully functional operating control or used to enable and disable only.

The communication interface is made as described on page 5 of this manual. Each TempTrac Control Module will be wired in a daisy chain fashion along with the other boilers in the OnTrac system. See the terminal illustration on the following page for connections.

The TempTrac must be assigned an individual address in order to communicate with the OnTrac. See "ASSIGNING BOILER ADDRESSES" on in the OnTrac Programming Manual 34-152.

If the module is applied as an enable/disable (ON/OFF ONLY), the R1 & R2 terminals will interrupt the operating circuit of the boiler. The modulation, staging and primary temperature regulation function will be controlled by the existing boiler controls. **WARNING: Do not disable the existing boiler controls or bypass the existing temperature limits.** When the (ON/OFF ONLY) function is used the TempTrac temperature sensor can be used for displaying the boiler temperature only or left to display the room temperature. The sensor is coiled and placed inside the enclosure. **Do not disconnect sensor.**



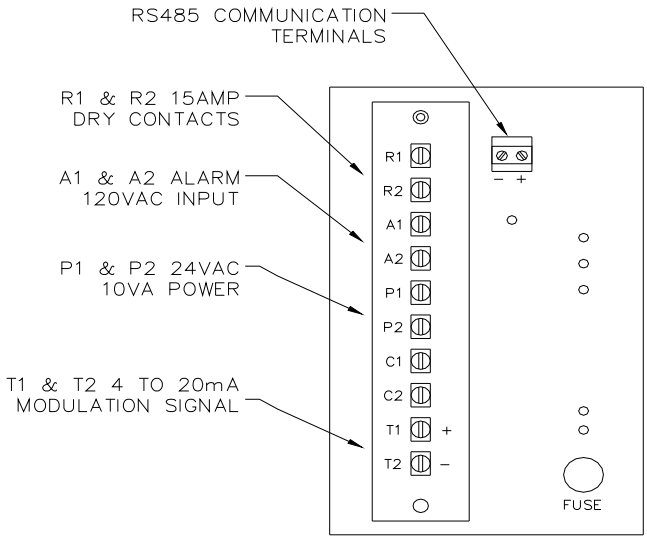
TEMPTRAC CONTROL MODULE CONTINUED

If the TempTrac Control Module is applied in the (FULL CONTROL), R1 & R2 terminals will interrupt the operation of the boiler and T1 and T2 terminals will provide a 4 to 20mA signal to modulate the firing rate of the burner. If applied, terminals A1 & A2 can be wired to an alarm input from the boiler. The TempTrac control will communicate boiler water temperature to the OnTrac Multiple Boiler Control. Alarm condition can also be communicated back to the OnTrac if the alarm input is wired to A1 & A2.

- The first step will be routing the operating circuit through the R1 & R2 terminals (15Amp Max). This will also require that the existing operating control set-point be raised so as not to interrupt the normal operation of the boiler. If this is not possible, the existing operating control must be removed. **WARNING: Do not bypass the existing boiler limits.**

- Next, the existing modulation control must be disconnected and replaced with the modulation signal from the TempTrac Control Module (T1 & T2).

- The temperature sensor must be installed in a location that allows the control module to monitor the boiler water temperature. If the sensor is not installed in a thermal well, care should be taken to find a clean surface location near the boiler outlet and insulate the junction well. The sensor probe dimensions are: ¼" dia x 1 ¾" long. The wire length is 5ft but can be increased to up to 100ft.



- The alarm terminals (A1 & A2) require a 120Vac input to indicate an alarm condition to the OnTrac.

SPECIFICATIONS

- Control – Microprocessor based Control with HMI (Human Machine Interface)
- Enclosure – 16 gauge, powder coated steel cabinet with hinged front door access
- Dimensions – CS8: 16 1/8” H x 16” W x 9” D
- Dimensions – CS4: 12 3/4” H x 9” W X 7” D
- Weight – CS8: 25 LBS
- Weight – CS4: 12 LBS
- Approvals Electronic Hardware - UL, CUL, CE
- Approvals Assembly – ETL panel shop
- Environmental - 32 -122°F (0-50°C) 10-95% Non-Condensing
- External Power Supply – 24 VDC 1.0 Amp, Class 2 plugin transformer for 115 VAC source power
- Output Relays - rated for 120VAC with a maximum switching current of 10A
- PLC Battery Backup - Lithium coin cell battery, Annual replacement
- Panel Battery Backup (CS-8 only) - Lithium ½ AA, 3.6V , Annual replacement